VIA MEDICA

ORIGINAL ARTICLE

Cardiology Journal
2007, Vol. 14, No. 6, pp. 552–560

ISSN 1897–5593

Heart failure management in Poland: The National Cardiovascular Disease Prevention and Treatment Program POLKARD, edition 2003–2005

Małgorzata Fedyk-Łukasik[1], Tomasz Zdrojewski[2], Barbara Wizner[1], Grzegorz Opolski[3], Jacek Dubiel[4], Małgorzata Stompór[1], Bogdan Wyrzykowski[2], Irina Mogilnaya[2], Michał Marchel[3] and Tomasz Grodzicki[1]

[1]Department of Internal Medicine and Gerontology, Medical College, Jagiellonian University of Cracow, Poland
[2]Department of Hypertensiology and Diabetology, Medical Academy of Gdańsk, Poland
[3]Department of Cardiology, Medical Academy of Warsaw, Poland
[4]Department of Cardiology, Medical College, Jagiellonian University of Cracow, Poland

Abstract

Background: *The aim of this study was to assess actual management of heart failure (HF) in Poland, both in outpatient clinics and hospitals.*

Methods and results: *The survey was undertaken between April 21 2005 and December 31 2005 in 796 outpatient departments and 258 internal medicine and cardiology hospital wards chosen at random. In total 3980 HF outpatients and 1294 inpatients were included. Trained nurses performed the questionnaire-based assessment of diagnostic procedures and pharmacotherapy. Heart failure was diagnosed among general practitioners' (GPs) outpatients most frequently, basing on symptoms (64.0%), ECG (47.0%) and chest X-ray (29.9%), while specialists based their diagnosis on symptoms (52.2%) and echocardiography (37.7%). Most HF outpatients and hospital patients were treated with ACE-I (88.3% and 81%, respectively), beta-blockers (68.3%* vs. *84.7%) and diuretics (74.4%* vs. *90.3%). Spironolactone accounted for 48.3%* vs. *56.3% of the patients, while digitalis glycosides 39.2% and 27.4%, respectively. AT-1 blockers were used very rarely (3.5%* vs. *2.5%).*

Conclusions: *GPs in Poland tend to diagnose HF on clinical grounds while specialists use more diagnostic investigations. Specialists provide higher quality HF care than GPs, both in outpatient clinics and hospitals. Significant progress in HF management has occurred in Poland since previous studies.* (Cardiol J 2007; 14: 552–560)

Key words: heart failure management

Address for correspondence:
Małgorzata Fedyk-Lukasik, MD
Jagiellonian University, Medical College
Department of Internal Medicine and Gerontology
Śniadeckich 10, 31–531 Kraków, Poland
Tel: +48 12 424 88 00, fax: +48 12 424 88 54
e-mail: m_fedyk@mp.pl
Received: 24.09.2007 Accepted: 21.11.2007

Editorial p. 521

Introduction

In Western Europe, heart failure (HF), confirmed in diagnostic tests or based on clinical premises, affects 5% of the population [1]. Matters of extreme importance include: the progressive course of the disease [2, 3], the high prevalence of rehospitalisation, and poor prognosis — worse than in some cancers (five-year survival is noted in about 25% of HF cases) [4]. It is assumed that in Poland about 800,000 to 1,000,000 people suffer from HF [5], yet we must presume that this number will grow — paradoxically, because of the development of medicine and, consequently, prolonged human life. Research carried out by Poznań medical centre shows that patients with HF (usually 60–80 years old) comprise 10–20% of general practitioners' (GPs) patients [6].

Although diagnosis of HF usually takes place in hospital, GPs and specialists in outpatient clinics continue the treatment [7]. This is both a challenge and a reason for Polish and European health services to improve medical care in this field [8–11].

The international research project IMPROVEMENT, also performed in Poland (1999–2000) among GPs, has shown that the treatment of patients with HF differs from the European Society of Cardiology (ESC) guidelines [12], edited in 2001, both in diagnostics and pharmacological treatment [13]. For instance, echocardiography, along with clinical statements, is the basis of HF diagnosis, yet the Polish part of the IMRPOVEMENT research project showed that only 18% of GPs named echocardiography as a necessary diagnostic examination [14]. In hospitals, this examination was done in 66% of HF cases; it occurred slightly more frequently in academic centres (68%). The basic medications used in HF patients in GPs' practices were ACE inhibitors and beta-blockers, in 65% and 34% of cases, respectively.

The present study was performed as part of the National Cardiovascular Disease Prevention and Treatment Program — POLKARD edition 2003–2005 (POLKARD), to evaluate diagnostics and therapy of HF in Poland among outpatient and hospital clinics, referring to the level of specialization and their position in the health service structure.

Methods

The methodology was described previously in detail [15]. The survey method used was based on three questionnaires to be filled out by doctors, patients and hospital managers, respectively. The data were obtained from medical files on HF patients' medical history, and diagnostic and therapeutic procedures, and was complemented with demographic data and patients' reports on the availability and quality of medical care, taken by 87 trained nurses. We also asked managers of all analyzed centres about the staff, procedures and medical equipment used there.

The multi-stage procedure of choosing the health centres to be investigated was designed to obtain a representative sample both for medical units and HF patients visiting outpatient clinics or discharged from hospitals. Randomization among hospitals was based on the governmental registration list (posted 17 March 2005) and a representative number of 260 hospitals (of which one refused to take part in the research) with internal medicine or cardiology departments were chosen. Consequently, the last five patients discharged with HF diagnosis were identified and their medical records were analyzed.

Recruitment of outpatient clinics was conducted in a similar way: 400 units were found by random choice from the governmental list, and the last five patients with diagnosed HF formed the research patient sample. The choice of 400 specialists working in outpatient departments was not random; they were indicated by the GPs included in the study as their consultants. All information from the last 365 days of case histories came from 396 specialists.

All included patients had HF diagnosed according to symptoms or laboratory examinations or imaging methods or pharmacotherapy response, and confirmation in their medical files (upon discharge or in case history). The only excluding criterion was an active neoplastic disease. All procedures of data gathering were subject to Polish regulations.

Results

The obtained data are presented as follows: HF patient characteristics, diagnostic procedures, ans treatment and prognosis in HF. Each category concerned hospital units and outpatient clinics, separately. We took under consideration differences in demographic data, village or city populations, position in health care structure, and the availability of therapeutic procedures.

Patient population

In total, 3980 outpatients with HF were recruited, including 2000 patients of GPs, 1970 patients of specialist care and 10 patients of an undefined level of care. The majority were male (53%), especially at the specialist care level (64%), over 70 years

Table 1. Study population.

	Health care level			
	Outpatient clinics		Hospitals	
	GPs	Specialists	Internal medicine units	Cardiology units
Males (%)	53.0***	64.0	53.1***	68.0
Age (mean ± SD)	68.8 ± 11.8	65.4 ± 11.5	71.4 ± 10.6	66.5 ± 12.2
Years (%)				
≤ 50	7.2***	10.6	3.6***	8.1
51–60	19.1***	25.2	12.8***	26.8
61–70	23.1**	26.7	23.9	21.5
71–80	34.5***	29.4	39.5**	30.6
≥ 81	16.1***	8.1	20.2***	12.9
NYHA class (%)				
I	4.0	4.3	0.6	1.0
II	46.9***	55.2	19.4	18.9
III	43.9***	36.0	51.8	48.8
IV	4.9	3.9	27.7	30.1
Coronary artery disease (%)	82.4***	76.8	70.2*	75.7
Hypertension (%)	84.5***	71.8	73.4*	67.2
Myocardial infarction (%)	35.1***	46.8	29.6***	49.9
Diabetes (%)	31.6***	25.4	34.8	29.7
Atrial fibrillation (%)	39.4	36.6	45.8*	39.6

*p < 0.05, **p < 0.01, ***p < 0.001

of age and in NYHA classes II and III. Additionally, 1294 patients discharged from hospitals with HF were enrolled. Most of them were males (53.1%), predominantly over 70 years of age and in NYHA classes III and IV. NYHA class increased with age: most of NYHA class I concerned patients under 50, and NYHA classes III–IV were diagnosed in patients over 80 years of age. Table 1 shows the study population.

Diagnosis

As echocardiography is a recommended method in HF diagnosis, its usage in hospitals and outpatient clinics was analyzed, considering patients' age, NYHA class and community size (Table 2). Usage of echocardiography depended on age and increased with community size and the level of specialization of the medical unit, both in outpatient clinics and hospital wards. Specialists diagnosed HF with echocardiography more frequently, with no differences among NYHA classes and city populations in outpatient clinics. Figure 1 shows the basis of HF diagnosis in outpatient clinics and hospital units.

Laboratory tests

We reviewed laboratory tests peformed on HF outpatients during the last year, including BNP and NT-proBNP. GPs and specialists made tests with similar frequency. The frequency of laboratory tests made during the last hospitalization revealed no significant differences between hospital units either, excluding BNP or NT-proBNP tests, which were used a few times more often in university clinics than in other medicine units. Almost all hospitalized patients underwent ECG tests; most of them chest X-ray and echocardiography. The differences between the medical units are shown in Table 3.

Treatment

The analysis of pharmacotherapy used in HF outpatients showed that the majority of them were treated with ACE-I, beta-blockers and diuretics. Spironolactone and digitalis were less common (< 50%). AT-1 blockers were rarely used in outpatient clinics (3.7%) or hospital units (2.2%). Differences in drug intake were revealed among the various age groups of HF outpatients (Fig. 2). Older patients were rarely given beta-blockers, with the opposite trend in diuretics and digitalis. The pharmacotherapy used in hospitals was not influenced by the patients' age, except for beta-blockers, which were less frequently used in older patients (Fig. 3). A similar trend was observed in spironolactone intake, but was not expressed so much. Digitalis was used less often than other drugs at every age. There was a significant difference between hospital and outpatient prevalence of spironolactone, more

Table 2. Percentage of heart failure patients tested with echocardiography.

	Outpatient clinics		Hospitals	
	GPs	Specialist care	Internal medicine units	Cardiology units
Tests made[#] (No of patients)	879	1493	413	344
Test made[##] (% of patients)	44	76***	48	82***
NYHA class (% of available)				
I	47.4	67.9**	80.0	100***
II	43.9	74.4***	51.8	83.1***
III	44.3	79.5***	47.5	83.3***
IV	45.4	83.3***	43.8	79.4***
Age (%)				
≤ 50	63.8	89.4***	80.6	97.0*
51–60	55.3	83.2***	61.3	81.3***
61–70	47.9	74.6***	51.7	79.8***
71–80	37.6	71.1***	47.1	82.0***
> 80	31.6^	61.4***	28.7^	81.5***
Population (%)				
Rural areas	42.6	–	–	–
Towns ≤ 30 000	46.6	73.7	37.9	82.1***
30 000–80 000	44.6	69.9	52.7	71.2**
80 000–400 000	49.0	86.4	61.1	79.8**
> 400 000	42.7	75.8	55.4	87.7***
Echocardiography not performed	56	24	52	18
No need/indication	4.1***	2.0	2.3	–
Cost too high	1.8**	0.8	0.3	–
No availability	8.5***	2.1	7.7***	0.2
Non compliance of patient	1.7***	0.2	0.3	–
Others	3.0***	1.1	1.4*	0.2
Missing data	37.0	18.0	40.4	17.4

[#]Echocardiography made in previous 365 days or echocardiography made during last hospitalization, [##]records available in questionnaire, *p < 0.05; **p < 0.01; ***p < 0.001; ^p < 0.001 (the youngest group *vs*. the oldest group)

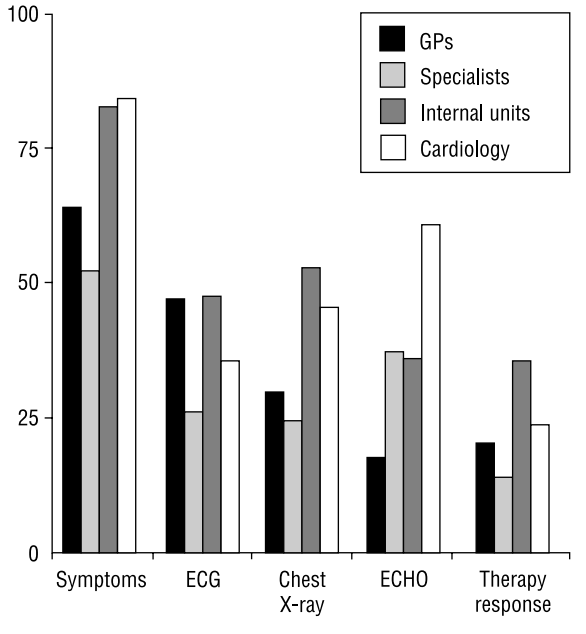

Figure 1. Basis of heart failure diagnosis in outpatient clinics and hospital units.

often given in hospitals. Table 4 gives the type of agents prescribed at hospital discharge and in outpatient clinic within the last 365 days for different NYHA classes. ACE-I were the most commonly prescribed drugs in NYHA classes I–III, while diuretics predominated in class IV. GPs used ACE-I less in every NYHA class. They also used fewer beta-blockers than specialists and hospital physicians. Spironolactone accounted for 18.1 to 88.3% of patients, increasing with higher NYHA class. The rate of prescription of digitalis was similar among NYHA classes and medical units, excluding NYHA IV by GPs, in which digitalis was used more often (61.9%). Results for NYHA I in both hospital groups were not representative due to the small number of patients (n = 5; n = 4).

Discussion

The Heart Failure POLKARD-2005 survey was the largest survey on HF in Poland, having

Table 3. Laboratory tests made in heart failure patients.

Patients (%)	Outpatient clinics#		Hospital units##	
	GPs	Specialists	Internal medicine	Cardiology
Blood cell count	88.2***	77.1	99.7***	97.9
ASPAT	65.1***	59.2	62.6	71.1**
Glycemia	92.1***	81.7	98.6	97.1
Na	77.4	80.4*	99.3*	97.9
K	80.7	83.9**	99.8	98.3
Creatinine	78.7	80.1	94.8	97.1*
BNP/NTproBNP	2.7	6.9***	1.5	7.2***
Urine test	86.7***	67.7	94.8***	78.3
ECG	94.3	98.7***	99.8	98.6
Chest X-ray	68.3***	63.6	80.9***	70.6
ECHO	44.0	75.8***	48.0	82.0***
Coronarography	13.5	18.1***	1.0	18.2***
Spirometry	23.4	11.8	6.3	6.9
ECG 24	25.2	42.4***	12.1	28.9***
Exercise test	21.7	26.2***	5.2	8.4*

#Tests made in previous 365 days, ##tests made during last hospitalization, *p < 0.05; **p < 0.01; ***p < 0.001

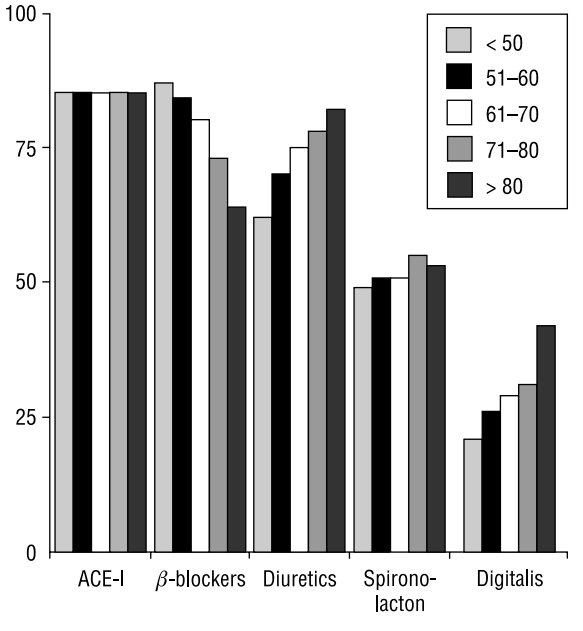

Figure 2. Percentage of patients taking pharmacotherapy by age in outpatient clinics.

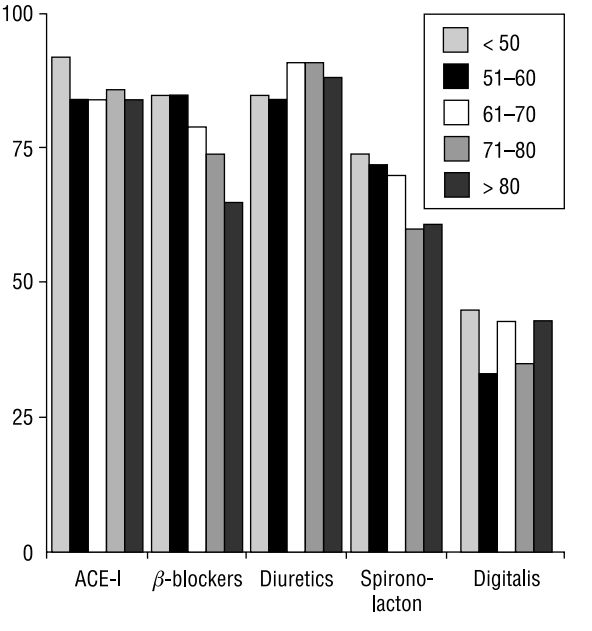

Figure 3. Percentage of patients taking pharmacotherapy by age in hospitals.

screened 3980 patients of outpatient clinics (1980 patients in specialist care and 2000 in the care of primary physicians) and 1294 patients discharged from 259 internal medicine and cardiology wards including 20 university hospitals. The purpose of the survey was to provide credible data on HF management, to compare the data to European guidelines and to formulate a program of improvement. Representative samples of physicians were invited to participate in this study. This paper describes two major areas of interest in HF management: diagnosis and treatment. Previous studies on HF epidemiology and management in Poland were made within the IMPROVEMENT project (1999–2000). Another multicentre retrospective study was performed in 2003 by the Institute of Cardiology in Warsaw involving 350 patients of cardiology units and 450 patients of internal wards. A comparison of

Table 4. Treatment by NYHA classes and medical units.

	ACE-I (%)	Beta-blockers (%)	Diuretics (%)	Spironolactone (%)	Digitalis (%)
GPs					
Total	81.0	68.3	74.5	48.3	32.3
NYHA I	73.4	61.5	45.6	29.1	16.5
NYHA II	81.9	71.2	68.7	40.7	24.7
NYHA III	81.0	67.3	81.7	55.7	38.5
NYHA IV	79.4	55.7	90.8	72.4	61.9
Specialists					
Total	88.3**	86.0**	74.4	56.3**	27.4*
NYHA I	78.6	88.1	42.9	18.1	10.8
NYHA II	89.8	85.5	67.9	48.7	20.5
NYHA III	88.0	86.3	86.3	69.0	37.5
NYHA IV	84.4	87.0	92.2	88.3	49.4
Internal medicine units					
Total	84.3	71.7	90.3	64.1	39.2
NYHA I (n = 5)	100.0	100.0	40.0	20.0	40.0
NYHA II	86.3	73.8	77.4	42.3	20.8
NYHA III	84.4	71.9	91.8	66.1	40.5
NYHA IV	81.7	69.6	97.5	77.5	49.2
Cardiology units					
Total	87.4	84.7^ ^	85.9^	67.8	36.8
NYHA I (n = 4)	75.0	100.0	25.0	25.0	25.0
NYHA II	86.1	86.1	64.1	51.9	17.9
NYHA III	88.2	87.7	90.2	72.5	36.9
NYHA IV	88.1	78.6	96.0	73.0	48.4

Specialists *vs*. GPs: *p < 0.01; **p < 0.001; cardiology *vs*. internal units: ^p < 0.01; ^ ^p < 0.001

study populations showed great similarities (according to age, gender and NYHA class) in spite of different methods of patient qualification [16]. The mean age in the POLKARD study was 68.8 years (66 in the Polish part of the IMPROVEMENT study and 70 in Europe), with the majority being men (58.5% *vs*. 55% and 55%, respectively). The most numerous group was that of patients 71–80 years of age, in every level of care; this was in accordance with the prevalence of HF in the population [17]. The very small percentage (0.6–4.2%) of patients with NYHA class I was as expected since those patients were diagnosed with HF probably "by the way" during a visit or hospitalization for another reason. Patients with NYHA class II were primarily from outpatient clinics (46.9% in primary care and 55.2% in specialists' consulting rooms), whereas NYHA class III were primarily from hospitals (51.8% of patients discharged from internal medicine units and 48.8% from cardiology units), with a significant rate of NYHA class IV (27.2% and 31%). This reflects the natural and progressive course of this disorder, with exacerbations more frequently requiring hospitalization and a greater number of deaths in higher NYHA classes. Most of the patients suffered from concomitant disorders, featuring as a cause of HF and having a key role in its progression and response to therapy. Coronary artery disease contributed prominently to HF in our study as well. Its prevalence ranged from 70.2% to 82.4% and was higher than in other clinical trials [18] probably due to the simple inclusion criteria and deep insight into medical files. It was also more frequent than in data from the Polish IMPROVEMENT study (65%) [13] and comparable with data from the EuroHeart Failure survey program (71%) [19]. The IMPROVEMENT study showed hypertension present in 47% of HF cases in Poland and in 58% of the EuroHeart study; the POLKARD study revealed that the frequency of hypertension diagnosed among HF patients was higher (67.2–84.5%). Specialists, both in outpatient and hospital subgroups, diagnosed it less frequently. Diabetes was the most non-cardiovascular concomitant disease in our study population (25.4–34.8%) and more frequent than in the trials cited above. The cause of such

differences is not clear, as HF populations seemed to be representative; however, some of them could be dependent on the differing ways of recruitment.

Diagnosis

The mainstay of optimum HF management is reliable and precise diagnosis relating to the criteria for the definition of the disease. The guidelines given by the European Society of Cardiology and the American College of Cardiology/American Heart Association state that the diagnosis of HF is evidenced when there are typical signs and symptoms of HF and when myocardial dysfunction occurs, confirmed by cardiac dysfunction in echocardiography at rest. If applicable, the diagnostic procedure can be completed with a clinical response (positive) to treatment directed at HF. Surprisingly, only 64% of GPs and 52.2% of specialists in non-hospital care reported symptoms as the basis of HF diagnosis; it could be expected to be almost 100%. Confirmation was not reliable either; they claimed to make echocardiographic tests in 17.2% and 37.7% of their HF patients. This does not allow us to challenge doctors' diagnoses, but forces us to compare their declared knowledge about HF and their everyday practice. According to the IMPROVEMENT data, 82% of HF patients in Poland receiving primary care had breathlessness, 82% — fatigue and 60% — ankle swelling. This could suggest that GPs use their knowledge in practice but they do not relate observed symptoms to precise definition of HF. The most common primary care outpatient clinics do not provide facilities for specialist investigation, which results in rare use of echocardiography in diagnostic processes. Moreover, IMPROVEMENT data showed that only 19% of GPs in Poland usually ask for it. As a consequence of delayed access to the most appropriate objective test, namely echocardiography (only 69% of the patients had ever had echocardiography performed), physicians rely on alternatives to it such as ECG or chest X-ray. Some of those tests were performed for routine diagnostic purposes or for the purposes of another disease. Our study showed a better, but still unsatisfying, situation in hospitals, both general and cardiological. There were recognized HF symptoms in 82% of patients of internal medicine units and 84.2% of patients in cardiology units, and echocardiographic tests were performed in 48% and 82% of cases, respectively, during last hospitalization. However, it should be kept in mind that a great proportion of hospitalized patients were previously hospitalized with a full range of tests performed, including echocardiography.

NYHA class had an impact on the frequency of echocardiography usage and decreases in all subgroups but not in consulting rooms. Less often, the use of echocardiography in older patients probably depended on the HF diagnosis given earlier, before the analyzed period. There was full access to records of echocardiographic tests only in about 56% of outpatients who underwent it, and it was easier in specialists' files (77%) than GPs' files (34%). The IMPROVEMENT data showed a greater frequency of echocardiography used for HF management than ours (on average 69% *vs*. 56%). As mentioned above, almost none of the primary care outpatient clinics provided facilities for echocardiography, as in all of Europe [20], and the results of these tests for GPs were provided from specialists or hospitals. Most of the patients of primary care were cured by cardiologists too; some disturbances in information flow, between levels of HF care, seem to be important, as confirmed in our data (see: tests made *vs*. records available). There was progress made in echocardiography access, noted in Polish hospitals, compared our to previous studies. In 2000–2001, the EuroHeart data showed that 46% of admitted HF patients underwent echocardiographic tests and 63% had available results. In 2003 Zieliński et al. [21] revealed that 37.8% of HF patients in internal medicine units and 73.1% in specialist care wards underwent echo tests, while our data showed 48% and 82%, respectively, at present.

Biochemical and laboratory tests were commonly performed, specifically in hospital units. BNP and NT-proBNP tests were rarely used, with maximum frequency of 7.2% of hospital cardiology unit patients. These tests were poorly available, both for diagnostics and monitoring of HF. Other tests in our study were made at similar frequency corresponding to the EuroHeart study subgroups of patients (ECG, Chest X-ray, exercise test, coronary angiogram and pulmonary function).

Pharmacotherapy

According to guidelines, all HF patients without contraindications should be treated with ACE-I. Our results show a widespread perception of the effectiveness of this group of drugs. Only 11.7–19% of HF patients did not take ACE-I, probably due to side effects or contraindications. In comparison to the IMPROVEMENT results and statistical data from the Department of Hygiene and Main Statistical Office in Poland [22] it should be stated that increased usage of ACE-I in HF from about 65% by primary care physicians in 1995–2000, up to 81% and 88.3% by cardiologists in consulting rooms,

at present. A similar trend was observed in hospital usage of ACE-I (from about 70% in the EuroHeart study in 2000–2001 and 82.6–87.8% in the Institute of Cardiology survey, up to 84.3–87.4% at present). The higher level of specialization of the physician went together with more frequently prescribed ACE-I, totally and in every NYHA class, in both outpatient clinics and hospital wards. It could be dependent on more precise HF monitoring and greater experience and knowledge. Age was not a limitation in ACE-I treatment in our study, with a similar percentage of HF patients by age, given those drugs.

The CHARM Programme (Candesartan in Heart Failure — Assessment of Reduction in Mortality and Morbidity) proved the efficacy of angiotensin-II antagonists in HF treatment, not only as an alternative for patients intolerant to ACE-I but also in a broad spectrum of HF patients whose medication was based on clinical diagnosis only, including those with and without preserved left ventricular function [23]. The rare cases of prescription of those drugs depended on the doctor's belief in narrow indications, limited to intolerance of ACE-I and the price (lack of reimbursement).

Several randomized clinical trials have documented the principal effect of beta-receptor blockade in reducing morbidity and mortality among patients with HF, hypertension and coronary artery disease.

Our data showed a significant increase in the usage of b-blockers in HF compared to the IMPROVEMENT study (68.3–86% *vs*. 34%), the EuroHeart study (71.7–84.7% *vs*. 46%) and Institute of Cardiology results (71.7–84.7% *vs*. 50.4–61.7%). The higher level of specialization of the physician went together with the more frequently prescribed beta-blockers, as in ACE-I drugs, in both outpatient clinics and hospital wards. The differences between GPs and specialists increased with higher NYHA class, but in hospital wards those differences were smaller. In older patients, beta-blockers were less commonly used with barely significant differences among hospital and outpatient units.

The ESC guidelines recommend diuretics for the treatment of fluid overload in HF, although there is no evidence that they reduce mortality. Some experts suggest that non-potassium-sparing diuretics (nPSDs) may cause even more rapid progression of HF [24, 25] and should be prescribed alongside spironolactone or other potassium-sparing diuretics (PSDs). Use of diuretics follows the natural progression of HF, and this pattern was reflected in our results, with the most frequent prescription in NYHA class IV. As diuretics are the group of drugs traditionally used in HF and hypertension as a comorbidity, they could be over represented, especially in NYHA class I. There is evidence to support the use of spironolactone in HF patients with advanced symptoms in NYHA classes III and IV. Our data showed that spironolactone, as a representative of aldosterone antagonists and PSDs, was used much less than diuretics (nPSDs), with range 48.3–67.8%, more often prescribed by specialists than GPs and more often in hospitals. It increased in comparison to the EuroHeart results when slightly more than 20% of the European HF patient population received spironolactone. We hope it also reflected a better acceptance of the conclusions of clinical trials and the ESC guidelines.

Digitalis glycosides have been used to treat HF for more than 200 years, with periods of fascination and rejection. In our study physicians of primary care used digitalis glycosides slightly more often than cardiologists, in their consulting rooms, and this regularity concerns patients in every NYHA class, particularly in NYHA class IV. A similar correlation was observed between internists and cardiologists in hospital units. Outpatients were more likely to receive digitalis when older, while hospitalized patients were prescribed digitalis regardless of age. This suggests either different populations were included or the guidelines were not followed equally. On the other hand, the prevalence of digitalis usage in HF in Poland has not changed significantly since the IMPROVEMENT and EuroHeart studies and have been close to the European average rate.

Conclusions

GPs and cardiologists differ in their diagnosis and management of HF. While GPs tend to diagnose more on clinical grounds, cardiologists use more diagnostic investigations, also due to the different patient populations treated. Cardiologists may provide higher quality HF care than GPs, both in outpatient clinics and hospitals. Improvement in HF management is possible by better organization and by streamlining information flow between levels of care, to make diagnostic procedures and medication more effective. However, significant progress in HF management has taken place in Poland since previous studies.

References

1. Cleland J, Khand A, Clark A. The heart failure epidemic: exactly how big is it? Eur Heart J, 2001; 22: 623–626.

2. Rich MW, Beckham V, Wittenberg C, Leven CL, Freedland KE, Carney RM. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. N Engl J Med, 1995; 333: 1190–1195.
3. Khand AU, Gemmel I, Rankin AC, Cleland JGF. Clinical events leading to the progression of heart failure: insights from a national database of hospital discharges. Eur Heart J, 2001; 22: 153–164.
4. Stewart S, MacIntyre K, Hole DJ, Capewell S, McMurray JJ. More 'malignant' than cancer? Five--year survival following a first admission for heart failure. Eur J Heart Fail, 2001; 3: 315–322.
5. Korewicki J, Leszek P, Kopacz M. Epidemiologia i aktualny stan w zakresie postępowania w niewydolności serca. In: Dubiel J, Korewicki J, Grodzicki T ed. Niewydolność serca. Via Medica, Gdańsk 2004: 2–18.
6. Wierzchowiecki M, Poprawski K, Nowicka A, Piatkowska A. Co lekarze rodzinni wiedza o rozpoznawaniu i leczeniu przewlekłej niewydolności serca? Kardiologia Pol, 2005; 62: 224–228.
7. Rywik SL, Wagrowska H, Broda G et al. Heart failure in patients seeking medical help at outpatients clinics. Part I: General characteristics. Eur J Heart Fail, 2000; 2: 413–421.
8. The Study Group on Diagnosis of the Working Group on Heart Failure of the European Society of Cardiology. Increasing awareness and improving the management of heart failure in Europe: the IMPROVEMENT of HF initiative. Eur J Heart Fail, 1999; 1: 139–144.
9. Cleland JGF, Swedberg K, Cohen-Solal A et al. A survey on the quality of care among patients with heart failure in Europe. Eur J Heart Fail, 2000; 2: 123–132.
10. Fruhwald FM, Rehak P, Maier R, Watzinger N, Wonisch M, Klein W. Austrian survey of treating heart failure — AUSTRIA. Eur J Heart Fail, 2004; 6: 947–952.
11. Dahlström U. Heart failure clinics: organization, development, and experiences. Curr Opin Cardiol, 2001; 16: 174–179.
12. Task Force for the diagnosis and treatment of chronic heart failure of the European Society of Cardiology. Guidelines for the diagnosis and treatment of chronic heart failure. Eur Heart J, 2001; 22: 1527–1560.
13. Cleland J, Cohen-Solal A, Aguilar Cosin J et al. Management of heart failure in primary care (the IMPROVEMENT of Heart Failure Programme): an international survey. Lancet, 2002; 360: 1631–1639.
14. Korewicki J, Tendera M, Cieśliński A. Postępowanie u chorych z niewydolnością serca na podstawie wyników badań IMPROVEMENT i EUROHEART FAILURE STUDY. Metodyka, opis populacji, diagnostyka. Folia Cardiol, 2004; 10: 697–706.
15. Wizner B, Dubiel J, Zdrojewski T et al. Polish study for assessment of diagnosis, treatment and costs of heart failure in Poland in random sample of out-patient clinics and hospitals, at different levels of care. Methodological aspects of the study had been realized as a part of the National Project for the Prevention and Treatment of Cardiovascular Diseases (PolKARD 2003–2005). Folia Cardiol, 2006; 1: 2–9.
16. Zieliński T, Piotrowski W, Wilkins A et al. Charakterystyka pacjentów z niewydolnością serca hospitalizowanych na oddziałach kardiologicznych i internistycznych w Polsce. Poster to Congress of Polish Society of Cardiology, Warsaw 2003.
17. Ansami M, Massie BM. Heart failure: How big is the problem? Who are the patients? What does the future hold? Am Heart J, 2003; 146: 1–4.
18. Krum H, Gilbert RE. Demographics and concomitant disorders in heart failure. Lancet, 2003; 362: 147–158.
19. Cleland JGF, Swedberg K, Follath F et al. for the Study Group on Diagnosis of the Working Group on Heart Failure of the European Society of Cardiology. The EuroHeart Failure survey programme — a survey on the quality of care among patients with heart failure in Europe. Eur Heart J, 2003; 24: 442–463.
20. Hobbs RFD, Korewicki J, Cleland JGF, Eastaugh J, Freemantle N; on behalf of IMPROVEMENT Investigators. The diagnosis of heart failure in European primary care: the IMPROVEMENT Programme survey of perception and practice. Eur J Heart Failure, 2005; 7: 768–779.
21. Zieliński T, Piotrowski W, Wilkins A et al. Diagnostyka u chorych z rozpoznaniem niewydolności serca — czy istnieją różnice w postępowaniu na oddziałach kardiologicznych i internistycznych w Polsce. Poster to Congress of Polish Society of Cardilogy, Warsaw 2003.
22. Korewicki J, Rywik S, Rywik T. Management of hart failure patients in Poland. Eur J Heart Failure, 2002; 4: 215–219.
23. McMurray JJV, Ostergren J, Swedberg K et al. for the CHARM Investigators and Committees. Effect of candesartan on mortality and morbidity in patients with chronic heart failure: the CHARM — Overall Programme. Lancet, 2003; 362: 759–766.
24. Domański M, Tian X, Haigney M, Pitt B. Diuretis Use, Progressive Heart Failure and Death in Patients in the DIG Study. J Card Failure, 2006; 5: 327–332.
25. Domański M, Norman J, Pitt B, Haigney M, Hanlon S, Pejster E. Diuretic use, progressive heart failure and death in patients in the Studies of Left Ventricular Dysfunction (SOLVD). J Am Coll Cardiol, 2003; 42: 705–708.